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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/814,133	03/22/2001	Atsushi Miyashita	500.39930X00	2033

20457 7590 06/21/2004

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EXAMINER	
PATHAK, SUDHANSHU C	

ART UNIT	PAPER NUMBER
2634	3

DATE MAILED: 06/21/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	09/814,133	MIYASHITA ET AL.
	Examiner	Art Unit
	Sudhanshu C. Pathak	2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *March 22nd, 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-26* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *March 22nd, 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

1. Claims 1-to-26 are pending in the application.

Drawings

2. Figures 17-to-26 should be designated by a legend such as "Prior Art" because only that which is already known is illustrated.

   Corrective Action is required.

Specification

3. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

   > (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claims 1-3, 10-11, 17 & 18, are rejected under 35 U.S.C. 103(a) as being unpatentable over Toru et al. (JP 09-247128) in view of Papadakis et al. (5,461,921).

Regarding to Claims 1, 2, 10 & 17, Toru discloses a digital transmission system using a digital modulation system comprising a digital signal transmitter having a first digital signal processing unit and a digital signal

receiver, receiving a digital signal from the transmitter (Abstract & Detailed Description, Paragraphs 1-4, 6-7, 15-16, 26-27, 29, 49-50 & Drawings 1-2) comprising a second digital signal processing unit for processing said digital signal from said transmitter and outputting a digital demodulated signal and a correlation value signal (Abstract, Drawing 2, elements 4, 9 & Detailed Description, Paragraphs 31-35); and a display section coupled to a the correlator for displaying information of the multipath signals received by the receiver (Abstract & Drawing 2, element 13 & Detailed Description, Paragraphs 8-9, 13, 17-18, 41 & 47). Toru further discloses the receiver to receive and correlate the multipath signals, and further the information of the multipath signals and the main path signals is displayed together (Detailed Description, Paragraphs 13-14, 32, 41, 44, 47 & Drawing 2, element 8 & Drawing 3). However, Toru does not disclose a signal converter, coupled to the output of the correlator, for generating a waveform indicating a transmission condition including the main wave in response to the correlation value signal and a display unit, coupled to the signal converter, for displaying the waveforms indicating a transmission condition.

Papadakis discloses correlating the received signal with a delayed replica of the spreading code so as to despread the received signal (Column 5, lines 50-62 & Fig. 1, element 38). Papadakis further discloses a signal converter, coupled to the output of the correlator, for generating a waveform indicating a transmission condition including the main wave in response to the correlation value signal (Column 5, lines 53-67 & Column 6, lines 1-16 & Fig. 1, element

42 & Claim 18) and a display unit, coupled to the signal converter, for displaying the waveforms indicating a transmission condition (Column 7, lines 25-60 & Column 9, lines 40-56 & Fig. 1, element 100 & Fig. 3a-b & Fig. 4 & Claim 6). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Papadakis discloses converting the correlation value signal from the correlator into a waveform and further to display the waveforms and this can be implemented in the digital receiver as described in Toru, by replacing the display unit, so as to provide the user with a detailed signatures of the correlation waveforms, along with the received multipath signals, to provide the user information to analyze the effect of the multipath signals on the signal to be demodulated in the receiver. Furthermore, the signal converter can be implemented to generate and display the main path and reflected waves relating to the digital signal transmitted.

Regarding to Claims 3, 11 & 18, Toru in view of Papadakis discloses a digital signal transmission system comprising a digital transmitter and receiver wherein the receiver further comprises a correlator and a signal converter and a display unit as described above. Toru further discloses that the receiver generates a BER signal indicative of the bit error rate of said digital signal and a field intensity signal of the field intensity of said digital signal, and said display further displays said BER signal and said field intensity signal (Abstract & Detailed Description, Paragraphs 28 38-41 & Drawing 1, elements 5, 12, 13). Therefore, it would have been obvious to one of ordinary skill in

the art at the time of the invention that Toru in view of Papadakis satisfies the limitations of the claim.

6. Claims 4-9, 12-16 & 19-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Toru et al. (JP 09-247128) in view of Papadakis et al. (5,461,921) in further view of Applicant Admitted Prior Art (AAPA).

Regarding to Claims 4, 9, 16, 19 & 23, Toru in view of Papadakis discloses a digital signal transmission system comprising a digital transmitter and receiver wherein the receiver further comprises a correlator and a signal converter and a display unit as described above. Toru further discloses implementing the OFDM modulating / demodulating in the transmission system (Abstract, Detailed Description, Paragraphs 29-31). However, Toru in view of Papadakis does not disclose the signal converter generating and displaying a guard-interval based on said guard interval signal in association with waveform.

The AAPA (Applicant Admitted Prior Art) discloses a signal transmission system using the digital modulation system such as an OFDM (Specification, Page 1, lines 2-23). The AAPA further discloses that in an OFDM modulation system it is common practice to add a guard interval to each signal unit in order to reduce the multi-path effect (Specification, Page 2, lines 5-15 & Fig. 17, element 3B & Specification, Page 4, lines 3-23 & Specification, Page 5, lines 1-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the AAPA teaches transmitting and receiving a guard-interval based on the guard interval signal and it is common

practice to implement the guard interval in an OFDM system, and this can be received, and converted and further displayed in the OFDM receiver as described in Toru in view of Papadakis. Furthermore, the guard interval being variable in a time period is a matter of design choice and there is no criticality in making this parameter a variable, and is dependent of the design choice. OFDM modulation / demodulation system is kind of a multi-carrier system, and it is the sum of large number of digitally modulated carrier waves, thus Toru in view of Papadakis in further view of AAPA satisfies the limitations of the claim.

Regarding to Claims 5, 12 & 20, Toru in view of Papadakis in further view of AAPA discloses a digital signal transmission system comprising a digital transmitter and receiver wherein the receiver further comprises a correlator and a signal converter and a display unit and displays the guard interval as described above. Papadakis further discloses the signal converter generates a time scale signal (Column 5, lines 53-67 & Column 6, lines 1-16 & Fig. 1, element 42 & Claim 18) and the display further can display a time scale based signal waveform as generated by the converter (Column 7, lines 25-60 & Column 9, lines 40-56 & Fig. 1, element 100 & Fig. 3a-b & Fig. 4 & Claim 6). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Papadakis teaches generating a correlation peak waveforms and the display unit displaying the waveforms in time base and or any other domains depending on the user and this can be

implemented in the receiver as disclosed in Toru in view of Papadakis in further view of AAPA thus satisfying the limitations of the claim.

Regarding to Claim 6, Toru in view of Papadakis discloses a digital signal transmission system comprising a digital transmitter and receiver wherein the receiver further comprises a correlator and a signal converter and a display unit and the receiver computes and displays the BER and the field intensity signal as described above. However, Toru in view of Papadakis does not disclose the signal converter generating and displaying a guard-interval based on said guard interval signal in association with waveform.

The AAPA (Applicant Admitted Prior Art) discloses a signal transmission system using the digital modulation system such as an OFDM (Specification, Page 1, lines 2-23). The AAPA further discloses that in an OFDM modulation system it is common practice to add a guard interval to each signal unit in order to reduce the multi-path effect (Specification, Page 2, lines 5-15 & Fig. 17, element 3B & Specification, Page 4, lines 3-23 & Specification, Page 5, lines 1-10). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that the AAPA teaches transmitting and receiving a guard-interval based on the guard interval signal and it is common practice to implement the guard interval in an OFDM system, and this can be received, and converted and further displayed in the OFDM receiver as described in Toru in view of Papadakis. Furthermore, OFDM modulation / demodulation system is kind of a multi-carrier system, and it is the sum of

large number of digitally modulated carrier waves, thus Toru in view of Papadakis in further view of AAPA satisfies the limitations of the claim.

Regarding to Claims 7, 8, 14, 15 & 21-22, Toru in view of Papadakis discloses a digital signal transmission system comprising a digital transmitter and receiver wherein the receiver further comprises a correlator and a signal converter and a display unit and the receiver computes and displays the BER and the field intensity signal as described above. Toru further discloses an abnormality detecting unit for detecting an abnormality of the digital signal from the correlation value and outputting a signal indicative of the abnormality (Drawing 1, element 8 & Detailed Description, Paragraphs 33, 47 & Claim 9). Toru further discloses the abnormality detecting unit to comprise a memory unit (Detailed Description, Paragraphs 33). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Toru teaches indicating an abnormality from the correlation value signals and this can be displayed in the display unit as described in Papadakis thus Toru in view of Papadakis in further view of AAPA satisfies the limitations of the claims.

Regarding to Claim 13, Toru in view of Papadakis discloses a digital signal transmission system comprising a digital transmitter and receiver wherein the receiver further comprises a correlator and a signal converter and a display unit and the receiver computes and displays the BER and the field intensity signal as described above. Papadakis further discloses the signal converter generates a time scale signal (Column 5, lines 53-67 & Column 6, lines 1-16

& Fig. 1, element 42 & Claim 18) and the display further can display a time scale based signal waveform as generated by the converter (Column 7, lines 25-60 & Column 9, lines 40-56 & Fig. 1, element 100 & Fig. 3a-b & Fig. 4 & Claim 6). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Papadakis teaches generating a correlation peak waveforms and the display unit displaying the waveforms in time base and or any other domains depending on the user and this can be implemented in the receiver as disclosed in Toru in view of Papadakis in further view of AAPA thus satisfying the limitations of the claim.

Regarding to Claims 24-26, Toru in view of Papadakis discloses a digital signal transmission system comprising a digital transmitter and receiver wherein the receiver further comprises a correlator and a signal converter and a display unit and the receiver computes and displays the BER and the field intensity signal as described above. Toru further discloses an abnormality detecting unit for detecting an abnormality of the digital signal from the correlation value and outputting a signal indicative of the abnormality (Drawing 1, element 8 & Detailed Description, Paragraphs 33, 47 & Claim 9). Toru further discloses the abnormality detecting unit to comprise a memory unit (Detailed Description, Paragraphs 33). Toru discloses computing the desired-to-undesired ratio (DU) to determine the severity of the multipath signals as an abnormality parameter (Detailed Description, Paragraphs 33, 47 & Claim 9). Toru further discloses generating an alarm when a BER exceeds a certain threshold (Drawing 1, element 14 & Detailed Description,

Paragraphs 8-11, 17-20, 40-42 & Abstract). Papadakis discloses an oscilloscope as a display unit wherein the display unit can be divided into a plurality of regions (Column 7, lines 25-60 & Column 9, lines 40-56 & Fig. 1, element 100 & Fig. 3a-b & Fig. 4 & Claim 6). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention that Toru teaches generating an alarm when an abnormality occurs. Furthermore, even though the alarm is set depending on the BER value it is a matter of design choice to select the BER instead of the DU ratio, which is the abnormality, depending on the correlation value signals. Therefore, Toru in view of Papadakis in further view of AAPA satisfies the limitations of the claims.

7. It is recommended to the applicant to amend all the claims so as to be patentable over the prior art of record. A detailed list of pertinent references is included with this Office Action (See Attached "Notice of References Cited" (PTO-892)).

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sudhanshu C. Pathak whose telephone number is (703) 305-0341. The examiner can normally be reached (Monday-Friday from 8:30 AM to 5:30 PM).

   If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin, can be reached at (703) 305-4714.

   Any response to this action should be mailed to:

   - Commissioner of Patents and Trademarks Washington, D.C. 20231

   Or faxed to:

- (703) 872-9314 (for Technology Center 2600 only)

Hand-delivered responses should be brought to:

- Crystal Park II, 2121 Crystal Drive, Arlington, VA, Sixth Floor (Receptionist).

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to:

Technology Center 2600 Customer Service Office whose telephone number is (703) 306-0377.

STEPHEN CHIN
SUPERVISORY PATENT EXAMIN
TECHNOLOGY CENTER 2600